in which many a manufacturer in the belligerent countries has found himself during the war with regard to both raw materials and partly manufactured products.

Numerous other committees have been formed, but the foregoing notes will be sufficient to indicate the far-reaching scope of the National Council's activities and the practical character of the work it proposes to undertake. Throughout the programmes of work laid down, but especially in that of the Botanical Raw Products Committee, it is interesting to note that the problems to be solved are of immediate practical importance, and that close co-operation with traders and manufacturers in solving them is considered essential.

T. A. H.

NOTES.

The British Science Guild is organising a comprehensive British Scientific Products Exhibition, to be held at King's College, London, for four weeks during the coming summer. The exhibition will comprise a large display of products and appliances of scientific and industrial interest which prior to the war were obtained chiefly from enemy countries, but are now produced in the United Kingdom. Much has been accomplished by our manufacturers since the opening of the war in industries in which previously we had been falling behind, and it is believed that the exhibition will have a stimulating influence upon scientific and industrial research by bringing home to the public the supreme importance of science in industry. Particulars of the exhibition will be issued shortly.

According to Press reports, platinum has been discovered in some quartz deposits in the Ober Rosbach district of the Taunus Mountains (Germany). Steps have already been taken to work the deposits.

The death of Mr. Daniel Macalister on April 12 is announced in *Engineering* for April 19. Mr. Macalister was the engineer and superintendent of the Greenock Corporation Water Department, and had also acted as the resident engineer during the construction of the James Watt Dock. He joined the Institution of Civil Engineers in 1882, and held the institution's Miller prize.

We regret to record the death of Mr. Richard B. Prosser, which occurred on March 26. Mr. Prosser was born in Birmingham in 1838, and was regarded as one of our best authorities on the history of invention. He was connected for about twenty years with the Patent Office Library, and became superintendent examiner of specifications in 1883. An account of his career appears in *Engineering* for April 19.

By way of supplement to the leaflet entitled, "Birds, Insects, and Crops," the Royal Society for the Protection of Birds (23 Queen Anne's Gate, S.W.1) has issued a series of twelve "Bird-Ally" postcards, each bearing on the front a quotation as to the value of birds on the land, while the back is left free for writing. The postcards, which can be had for 4½*d.* a packet, should be useful at the present time, when the Board of Agriculture has warned growers of probable insect plagues.

The death is announced, in his eighty-sixth year, of Mr. E. T. Wilson, a well-known medical man, of Cheltenham. In 1901 Mr. Wilson was the president of the Medical Section when the British Medical Association met at Cheltenham. He contributed numerous papers to the medical periodicals, and was the author of "Sanitary Statistics of Cheltenham." He founded a naturalists' society at Cheltenham, and was interested in the collection of Neolithic flint implements. His son, Dr. E. A. Wilson, was a member of Captain Scott's Antarctic Expedition, and died on the journey from the South Pole.

The subject of the Jacksonian prize of the Royal College of Surgeons of England for 1919 is to be "The Investigation and Treatment of Injuries of the Thorax received in War." The John Tomes prize of the college for the period 1915 to 1917 has been awarded to Mr. J. G. Turner for his work on the subject of dental pathology. In consequence of the temporary removal of the pathological specimens of the museum of the college for greater safety, the delivery of the Erasmus Wilson lectures, and the demonstrations, are to be discontinued for the duration of the war.

By the death, at the age of seventy-seven, of Col George Adolphus Jacob, India has lost an accomplished scholar. Belonging to a well-known Anglo-Indian family, which included the famous founder of Jacob's Horse, he entered the Indian service at the age of sixteen in the Bombay Presidency, where he mastered the Marathi language, and later on devoted himself to the study of Sanskrit. His chief work was done in philosophical literature—a monumental concordance to the principal Upanishads and the Bhagavad Gita, and his manual of Indian Pantheism, the best introduction to the Vedanta. His official work was the Directorship of Military Education, and he acted as examiner in Sanskrit and Marathi for the University of Bombay. The University of Cambridge conferred on this eminent scholar the honorary degree of Litt.D.

In the *Nieuwe Courant* Dr. I. P. Lotsy recently directed attention to the hybridisation experiments of Mr. R. Houwink, a private breeder of Meppel, Holland, who has tested Darwin's view that our domestic fowls are derived from *Gallus bankhiva.* He has obtained fertile hybrids of this species with *G. Sonnerati,* and also with *G. furcatus.* The latter hybrid was again fertile with *G. bankhiva,* whence it would appear that all three species may be among the ancestors of domestic breeds. Domesticated rabbits have been found fertile both with wild rabbits and with hares, and hybridisation experiments are also in progress with jackals, foxes, and wolves, in order to determine the origin of domestic breeds of dogs. Experiments on the crossing of wild and domesticated pigs are subsidised by the Dutch Government.

The *Times* of April 19 and 20 contained letters by Mr. W Baden-Powell and Mr. R. B. Marston directing attention to the Order about to be made by the Board of Agriculture and Fisheries authorising the taking of salmon kelts, subject to certain conditions It is suggested by both correspondents that an excellent opportunity is thus afforded for obtaining evidence with regard to the rather obscure questions whether and to what extent kelts feed in fresh water, and also whether they destroy the young of their own species. Many anglers would probably be glad to take out the stomachs and digestive organs of the fish they kill and send these, with full particulars, to scientific men appointed by the Board. Hitherto it has been illegal to take kelts, and so the evidence with regard to their feeding habits is very unsatisfactory and meagre. Mr. W. J. M. Menzies, in the

Times of April 23, states that he has examined a certain number of kelts in all the so-called "mending" stages, and has found no trace of food in any of them.

HULL is probably one of the few places in this country which are extending their museums in these times. It may be remembered that during the Museums Conference at Hull in 1913, Col. G. H. Clarke purchased for 1000*l.* the Mortimer collection of Yorkshire archæological and geological specimens, which the members had an opportunity of visiting at Driffield, and as the building is now required for other purposes the collections have been removed. The Hull Corporation has taken some temporary premises in Albion Street, in the centre of the city, and in these the entire collection has recently been placed, and steps have been taken to prepare the museum for public inspection. When it is remembered that in the archæological collection alone there are the entire contents of nearly four hundred barrows of the Bronze age, as well as several hundred skulls of prehistoric, Roman, and Saxon date, about 1000 prehistoric, Roman, Saxon, and medieval vases, some of large size, and the contents of several Anglo-Saxon and Roman cemeteries, it will be understood that the removal of the collection has been an undertaking of some magnitude. Nearly twenty vanloads were required to remove the specimens, and we understand the entire collection, consisting of about 60,000 objects, has reached its new quarters without damage.

IT is proposed shortly to establish in Naples a National Experimental Station for Ceramics and Glass-making, in which will be incorporated the existing Ceramic Laboratory of the Royal Museum for Industrial Arts at Naples. *L'Economista d'Italia* for April 4 states the objects of the new institution as follows:—(1) To carry out researches bearing on problems connected with ceramics and glass-making, and to promote such manufacture by publications, lectures, and assistance; (2) to experiment with and publish new methods of working, for the better utilisation of raw materials, the improvement of the quality of the products, and the effective utilisation of by-products and waste; (3) to investigate and suggest new sources of supply of raw materials and new markets for the products; (4) to give opinions and advice; (5) to make analyses, tests, and researches, and to verify instruments and apparatus when requested by the public, by manufacturers, or by public bodies; (6) to provide laboratory accommodation, etc., for the use of students; (7) to publish a bulletin giving results of researches and other information; (8) to admit into the laboratories as pupils young students who have passed through a technical college and taken a diploma, etc., and intend taking up the manufactures mentioned; further, to hold evening and holiday classes of theoretical and practical instruction for work-people.

AN account of an interview with Prof. E. H. Starling on the position of natural science in the educational system of Great Britain, as described in the report to which we directed attention last week, is given in the issue of the *Observer* for April 21. The report, Prof. Starling remarked, is an anticipation of and preparation for nothing short of a revolution in the intellectual life of the country. Hitherto in this country we have neglected and despised science. We have not understood that it is simply the whole of human experience ordered and classified. A State which tries to govern its affairs without science is blind. Every step it takes is a step into unexplored ground, and it only learns by bitter experience, by tumbling into every shell-hole it comes across. That is what we call "muddling through"—a method of which some people are proud. The question of the future is whether our democracy has learned the bitter lesson that the war has taught us—that for survival it must use the laws given by science, or go under. The penalty of sin is death. And sin in this case is a neglect of Nature's laws. One of the main points of the report is that it is necessary not only to make scientific experts, but also to educate every individual in this country so that he may know of the existence of this mass of human experience, and may recognise that behind every problem with which he is confronted there is the great body of science to which he can appeal for a right solution to his difficulties.

MR. L. ANDREWS read an interesting and suggestive paper to the Institution of Electrical Engineers on April 18 on the "Overseas Distribution of Engineering Appliances." It is generally admitted that the British artisan as an engineering craftsman can hold his own against all competitors. He attributes, therefore, the commercial success of Germany and America in the pre-war days to the excellence of their systems of distribution. The British manufacturer is in too many cases content to make machines and apparatus and trust to his agents abroad to get the orders, leaving the conveyance of the goods to an outsider. This lack of co-ordination leads to unnecessary expense. To remedy this, Mr. Andrews proposes a modified form of State control. Some system of overseas trade service should be set up and managed by the State or by the State and private enterprise combined. Its first aim would be to provide facilities for British subjects in all parts of the world to secure British-made engineering appliances on satisfactory terms, and its second aim would be to give to British producers the fullest information regarding overseas requirements. Mr. Andrews instanced the Government Postal Service as the kind of department he advocated: it is run on strictly business lines, being financially self-supporting, and yet it competes with no private undertaking. He objected strongly to any despotic mandatory control by the State.

NEWS of the death of Dr. Ethel de Fraine, Fellow of the Linnean Society, for some years lecturer in botany at Whitelands Training College, and afterwards lecturer in botany at Westfield College, University of London, has been received with great regret by many friends. Dr. de Fraine was a conscientious worker in the field of plant anatomy, particularly in the realm of seedling anatomy, a branch which has acquired great prominence of recent years. The series on the Gymnosperms, in which she collaborated with Mr. T. G. Hill, adds considerably to our knowledge of the obscure "transition" phenomena between the vascular structure of the stem and that of the primary root, and a similar independent contribution published in 1910 deals with the seedling structure of Cactaceæ. The School of Seedling Anatomy, to which these publications belong, was initiated by the work of the late Miss E. Sargant, and arose at the beginning of the present century as a modern development of that search for phylogenetic clues, that hunt for the "missing link," which is attributable to the spread of evolutionary ideas following upon the publications of Darwin. Dr. de Fraine, fixing her attention on taxonomic rather than on broad phylogenetic characters, was led to conclude that the study of seedlings was barren from this point of view. Her research career covered a period of about ten years, during which she made an incursion into the realm of fossil botany with a paper entitled "The Structure and Affinities of Sutcliffia." The ecological expeditions in which she took part resulted in 1913 in a treatise on the anatomy of Salicornia, the common seaside glasswort, and her last publication in 1916, was on the morphology and anatomy of the genus Statice, as studied from its habitat at Blakeney Point. Dr. de Fraine belonged to a type of painstaking worker whose thoroughness of hand and spirit the world of science can ill afford to lose, and it is greatly to be feared that her faithful pursuit of knowledge, coupled as it was with a strenuous professional life, conspired to rob us of the further fruit of her labours. She died at Falmouth on March 25, after an illness of two years.

The Rev. H. G. O. Kendall, in the April issue of *Man*, reports the discovery at East Farm, Winterbourne Monkton, North Wilts, of a fragment of a fine, laminated, micaceous sandstone, very similar to the so-called altar stone at Stonehenge. This has been chipped into shape all round its periphery, so as to produce sharp-cutting edges and to form a knife, apparently of the Bronze age, resembling a small broad-bladed bronze dagger.

Dr. A. M. Meerwarth, assistant-curator of the Ethnographical Museum, Petrograd, recently visited India, and has compiled a useful "Guide to the Collection of Musical Instruments in the Indian Museum, Calcutta." A large proportion of the specimens were presented by the late Raja Sir Sourindro Mohun Tagore, the well-known authority on Indian music. The instruments, except a few of Tibetan origin, are almost exclusively from India or Burma. The guide is carefully prepared and gives much useful information on Indian music. In all 284 specimens are illustrated and described.

The dialects composing the Salinan Indian linguistic group, of which two survive in the Missions of San Antonio and San Miguel, are described in a monograph by Mr. J. Aldem Mason, published in vol. xiv., No. 1, of the Publications of the University of California on American Archæology and Ethnology. Recently Drs. Dixon and Kroeber have connected Salinan with Chumash in an "Iskoman" group, which, in turn, they have later come to regard as part of the Hohan family, a reclassification now accepted by several American philologists and anthropologists. Mr. Mason's monograph gives full linguistic details, and he prints a number of beast folk-tales in the original text with an English translation.

An interesting study of dosage in radium therapy by Mr. J. C. Mottram and Dr. S. Russ is given in the March issue of the *Archives of Radiology and Electrotherapy* (No. 212). Small subcutaneous cancerous nodules were treated, and among other results it was found that there is much less effect upon the skin (inflammation, loss of hair, etc.) when it is exposed for a long time to a weak source of radium emanations than when a strong source is used for a short time, the effect upon the cancerous growths being very nearly the same in the two cases.

The Journal of the Royal Microscopical Society for March (1918, part i.) contains an account, by Mr. R. Paulson, of microscopical and biological work carried out at the civilian internment camp at Ruhleben, near Berlin. The equipment of the laboratory consists of ten microscopes with accessories, a microtome, incubators, etc. Dr. A. E. Lechmere has given a course on elementary biology, Mr. M. S. Pease one on heredity, Mr. S. R. Edge has lectured on animal physiology, and Mr. A. Hill has given instruction on the testing of agricultural seeds. Various friends have presented material. A library of 500 volumes has been got together. At present Nature is the only periodical and link with scientific activity outside.

A disease known as "trench fever" has been very frequent among the troops on the Western front. It is characterised by recurrent attacks of fever of short duration, usually at intervals of four or five days, and followed generally by acute pain in the shins and frequently by dilatation and disordered action of the heart. A committee under the chairmanship of Surg.-Gen. Sir David Bruce was instituted to investigate the causation and spread of the disease. As regards the latter, various circumstances implicated the louse, and experiments were made on this hypothesis. Lice were allowed to feed on patients in all stages of the disease, and were then allowed to bite healthy volunteers; the result was negative. Next the excreta of lice similarly infected were applied to a scarified area of skin, and in from six to ten days after, all the five volunteers so treated developed trench fever. From these experiments it is evident that the bite alone of the louse does not produce trench fever, but that when the excreta of infected lice are scratched into the skin the disease is produced. The funds for this research have been provided by the Lister Institute of Preventive Medicine, and details of the research are published in the *British Medical Journal* for March 23 (p. 354).

Present-day applications of experimental psychology were dealt with recently in two lectures delivered at the Royal Institution by Lt.-Col. C. S. Myers. The first lecture was mainly on the application of psychological experiment to industrial efficiency. Laboratory researches on mental and muscular work were described, showing the relation between rest and length of task, the importance of determining and employing the optimal load, and the various psychological factors which affect the work curve. The economical value was emphasised of introducing systematic rest pauses in the workshops and of selecting by appropriate tests employés fitted for tasks demanding special skill. There is a wide difference between the increased production due to the adoption of scientific short-hand methods of industrial efficiency and that due to the more dangerous process of "speeding up." In the second of his lectures Lt.-Col. Myers devoted himself mainly to the subject of nervous breakdown, pointing out the extreme importance of early and proper treatment of the disorder in industrial as well as in Army life. He showed how the enormous importance now attached by psychology to the influence of the feelings had come to revolutionise our conceptions of memory, of personality, and of consciousness generally; and he insisted on the necessity for continuing in peace time the special hospitals and the special psychological training of doctors which it had been found necessary to organise owing to the effects of war-strain.

The Transactions of the London Natural History Society for 1916, which has just been issued, contains a long address on "Apterousness in Lepidoptera," by Dr. T. A. Chapman, which is of remarkable interest. Not only has Dr. Chapman summarised all that has been recorded on this theme, but he has also added many new facts gleaned from a long study of this subject. He is of opinion that the apterousness of the summer moths is due to factors entirely different from those which have brought about the apterousness of winter moths.

The report on the progress and condition of the United States National Museum for the year ending June 30, 1916, has just reached us. While bearing witness to the wide field of activities which this museum embraces, it shows also that the museum's work is fully appreciated by other departments of the State.

The Department of Justice, for example, obtained for Dr. Aleš Hrdlička, curator of physical anthropology, three months' leave of absence from the museum in order that he might undertake the anthropological examination of about 800 Chippewa Indians for the purpose of determining which should be classed as "full-bloods." This necessitated a preliminary study of the Sioux Indians of North and South Dakota. Apart from the immediate purpose of this investigation, valuable scientific results have been obtained, for in all 1200 Indians were examined, and from the data thus collected it has been possible to establish thoroughly the characteristics of the Sioux people, and to put on record the present racial status of the Chippewa people, who, as a pure race, are fast disappearing.

How thoroughly alive the U.S. Department of Agriculture is to all affecting the welfare of agriculture is well illustrated in a recent Bulletin (No. 621) by Mr. E. R. Kalmbach on "The Crow and its Relation to Man." The economic position of the common crow (*Corvus brachyrhynchos*) and its four subspecies has long been an intricate problem, and has formed the subject of many investigations, of which the most important is that of Barrows and Schwarz (1895), based upon an examination of the stomach contents of 909 birds, mainly from the eastern States. The report now issued is based upon an examination of 1340 adults and 778 nestlings. As the result of this inquiry the author shows that 25 per cent. of the yearly sustenance of the adult birds is animal matter, and 71·8 vegetable matter. Of the former 18·7 consists of insects, and of the latter 51 per cent. of corn and other grain, 3·7 per cent. of cultivated fruit, and 17 per cent. of wild fruits and seeds. The young birds remain in the nest for about three weeks. The percentage of animal food in the nestlings was 83·4, and 16·6 of vegetable matter. Of the former 48 per cent. consisted of insects, 6·2 per cent. of rodents, and 1·6 per cent. remains of poultry and their eggs. The actual corn was only about 10 per cent. Mr. Kalmbach is of opinion that the misdeeds of this bird greatly outnumber its virtues, and points out that its capabilities for good or evil are great. The attitude of farmers, he thinks, should be one of toleration where no serious losses are suffered, rather than one of uncompromising antagonism resulting in unwarranted destruction. This bird seems to fill a position somewhat analogous to that occupied by the rook in this country, and from the results obtained in this investigation we should have presumed that a considerable reduction in its numbers was advisable.

THE influence of the Cambridge geological school on palæontology outside our islands is evidenced by the appearance in 1917 of two handsomely illustrated memoirs, one by Dr. F. R. Cowper Reed, on "Ordovician and Silurian Fossils from Yunnan" ("Palæontologia Indica," vol. vi., Mem. 3, Geol. Surv. India), and the other by Mr. H. Woods, on "The Cretaceous Faunas of the South Island of New Zealand" (N.Z. Geol. Surv., Pal. Bull. No. 4).

PROF. E. W. SKEATS (*Amer. Journ. Sci.*, vol. xlv., p. 81, 1918) usefully reviews the evidence of the Funafuti boring in reference to the current discussion on the origin of barrier reefs and atolls, and points out that the discovery of a thickness of 1100 ft. of shallow-water deposits cannot be lightly set aside. On p. 194 of the same volume, he shows that the conversion of marine limestone into dolomite is commonly associated with shallow-water conditions. The rock at Funafuti from 635 ft. down to 1114 ft. is dolomitised, and hence this mineral feature affords additional evidence of subsidence of the atoll as it grew.

OWING to the difficulty most people have at the present time in getting copies of scientific periodicals published abroad, the appearance of the monthly parts of *Science Abstracts* is awaited with much less patience than was the case before the war. The indexes of the two volumes for the year 1917 have just been issued, so that the volumes now become available for reference. The physics volume deals with nearly 1400 abstracts, has 640 pages, the name-index twenty-three pages, and the subject-index forty-four pages. The electrical engineering volume deals with fewer than 870 abstracts, has only 490 pages, a name-index of eleven pages, and a subject-index of twenty-two pages. The average length of an abstract in the former volume is a little more than 0·4, and in the latter a little more than 0·5 of a page. Both show a material increase in length over abstracts of five or six years ago, due, we presume, to so many of the most experienced abstractors being otherwise occupied. The volumes remain two of the most useful issued in this country, and their cessation would entail an expenditure of time on the part of scientific workers in looking up references which cannot be contemplated with any satisfaction.

IN the *Biochemical Journal* for December last Mr. A. Weinhagen describes the reduction of phenylethylamine, prepared from phenylalanine, by shaking the aqueous solution of its hydrochloride with finely divided platinum and hydrogen. It was found that almost exactly the volume of hydrogen theoretically requisite was actually absorbed. The product of reduction is hexahydrophenylethylamine, of which the platinichloride, the aurichloride, and the picrate are described. On the other hand, all the author's attempts to reduce *synthetic* phenylethylamine by the same method were in vain, although the finely divided platinum used was shown to be active. No explanation for the failure can as yet be offered. Practically the only difference between the synthetic phenylethylamine and that obtained from phenylalanine is that the former decolorises permanganate solution only very slowly, whilst the latter does so instantly. Attempts to reduce tyrosine, phenylalanine, and *p*-hydroxyphenylethylamine in the same way were also unsuccessful.

IN our issue of March 9, 1916, we made a passing reference to the Derwent Dam, then recently completed, forming part of one of the five large reservoirs included in the Derwent Valley scheme for the supply of water to the towns of Leicester, Derby, Sheffield, and Nottingham and the counties of Derby and Nottingham. A paper by Mr. Edward Sandeman, read before the Institution of Civil Engineers on April 9, gives a fuller account of the undertaking now being carried out by the Derwent Valley Water Board. The works authorised by Act of Parliament in 1899 comprised the provision, in six large reservoirs, of a total storage capacity of 10,000 million gallons, with aqueducts, filter-beds, and other ancillary works, at an estimated expenditure of about 6,000,000*l*. One of these reservoirs, the highest and smallest, was afterwards abandoned, and the storage capacity of the Derwent reservoir correspondingly increased. The gathering ground is 31,946 acres in extent, and lies on the southern slope of the Pennine Range at an elevation varying from 500 ft. to 2000 ft. The average rainfall is 47 in. per annum. The water is very soft—2° to 3° of hardness—but is discoloured by peat when in flood. The first instalment of work, which has been completed, comprises the Howden and Derwent reservoirs, supplying 13 million gallons per day. The two dams are very similar as regards dimensions, their lengths being respectively 1080 ft. and 1110 ft.; their heights 117 ft. and 114 ft.; and their greatest base widths, 176 ft and 171 ft. The foundations are in beds of black shale and sandstone. Temperature records in the masonry of the Derwent Dam, taken by means of thermophones between the years 1909–15, showed a maximum variation of 80° within 1 in. of the face, and not more than 7° at 30 ft. in the interior. The main aqueduct is 28 miles in length, and consists of 4 miles of tunnels, 7 miles of covered conduit, and 17 miles of main-pipe line.

A handy classified catalogue of college text-books and works of reference on agriculture, botany, chemistry, engineering, geology, mathematics, physics, technology, and zoology has just been issued by Messrs. H. K. Lewis and Co., Ltd., 136 Gower Street, W.C.1, and should be of service to many of our readers.

OUR ASTRONOMICAL COLUMN.

The Companion to Sirius.—In a letter to the *Observatory* for April, the Rev. T. E. R. Phillips directs attention to the fact that the companion to Sirius is now readily visible in instruments of moderate aperture. This is accounted for by the circumstance that the companion is now in the neighbourhood of greatest elongation from the bright star. The star was easily observed by Mr Phillips with an 8-in. refractor, and it was conspicuously bright in a reflector of 18-in. aperture, but in both cases a quiescent atmosphere was an essential condition. The mean of several determinations gave the position angle of the companion as 72·1°, and the separation as 10·89″ Mr. Innes, of the Union Observatory, Johannesburg, also states that the companion is now an easy object, and for 1917–18 gives the position angle 73·4°, and distance 11·24 . The observations suggest that Doberck's period of 49·49 years is too short by 0·22 year, or that the period is 49·71 years.

Physical Observations of Venus.—Among numerous observations detailed in Circular No. 41 of the Union Observatory, Johannesburg, Mr. Innes reports some interesting observations of the planet Venus. Observations were commenced on November 15, 1917, with the object of determining as nearly as possible the actual date of dichotomy, and these resulted in showing that half the visible disc was illuminated on November 23. The date given in the Nautical Almanac for this occurrence, based on geometrical reasoning, was November 29·9 G.M.T., so that the observed time was seven days in advance of the predicted time. It was remarked by all the observers that while the edge of the planet was very bright, there was a darkish lune along the terminator. It was also noted that the northern cusp was more acutely pointed than the southern.

The circular also includes measures of eighty-seven double stars, photographic observations of comet 1917*a* (Mellish) and of several asteroids, and three additional sheets of the valuable photographic atlas of the southern heavens which is being issued by the Union Observatory.

The Lunar Crater Eimmart.—Attention has previously been directed by Prof. W. H. Pickering to apparent changes in the lunar crater Eimmart, which are of a non-periodic nature and independent of the moon's phase. A careful study of this crater has been carried on at the Florence Observatory during the last three years by Dr. Maggini, who has made use of a telescope of 4-in. aperture, with powers of 175 and 300 (*L'Astronomie* March, 1918). The crater is situated on the north-western edge of the Mare Crisium, in longitude 295° and latitude 24° N., and has a diameter of about 40 km. It is best observed about two or three days after full moon, when the Mare Crisium is near the terminator. On the western rampart there is a very small crater, which usually appears as a brilliant point, but shows a deep cavity under very oblique illumination. Following a general description of the appearances under different illuminations, Dr. Maggini gives an account of the changes noted in September, 1915, and October, 1916, when certain portions were of quite unusual brightness. The observations suggest that the changes originate in the craterlet, which is surrounded by a white deposit, extending in rays somewhat similar to those about Tycho. It seems possible that there is an occasional recrudescence of activity in the craterlet, with emission of a white substance, masking for a time the craterlet itself, and afterwards dispersing over the surface. Continued observations promise to be of considerable interest.

THE NATIONAL DYE-MAKING INDUSTRY.

To assure a national supply of dyes, independent of any foreign sources, it is necessary that in respect of each of the three stages of manufacture—(1) raw products, (2) intermediates, (3) finished dyes—this country should be self-supporting. An abundant supply of the necessary raw products is available in Great Britain, and, moreover, their manufacture in the state of purity required for the production of dye manufacture has long been carried out within the country on a very extensive scale. In respect of intermediates, at the outbreak of war we were very badly placed indeed, for although at one time or another various firms in this country had manufactured a considerable number of the necessary intermediate products, in most instances they had been forced, by continuous underselling on the part of German firms, to abandon their manufacture. This state of affairs led to the result that the British firms which manufactured colours were to a very large extent dependent upon imported intermediate products. The correctness of the statement that before a really national supply of dye can be established there must be a sufficient, and secure, supply of intermediates will not be denied by anyone who has to deal with the manufacture of colouring matters, for without them the dye-maker is in the position of the dyer who has no supply of colours. Moreover, if the dyewares that are to be produced from them are to be of a kind which will enable our textile industry to compete successfully in the open export market, every dye-maker will admit that the intermediates must be of the finest quality.

On Saturday last, April 20, a considerable party, representing the Press of this country, visited the works of British Dyes, Ltd., at the invitation of the management of the firm. The chairman of the company (Mr. J. Falconer, M.P.) and the managing director (Mr. J. Turner), in their remarks to the assembly emphasised the great importance of intermediate products, and also the fact that to ensure a sufficient national supply of these compounds of the highest quality was one of the first aims of the company. During the inspection of the works the party visited the research, technical control, and large-scale experimental laboratories; colour sheds; plant for the production of intermediates, both the trial and the large plants being included; and the various subsidiary plants for the production of the requisite heavy chemicals, gas, power, etc.; and those present were able to obtain a very fair idea of the progress that has been made by the company. It must have been gratifying to the visitors to see at work the large plants which recently came into operation for the production of some of these essential intermediate products, particularly to those who had a grasp of the great amount of preliminary work that is necessary